CLAIMS

1. An impedance blocking filter circuit used in telecommunication systems for interconnecting between incoming telephone lines and customer's terminal equipment so as to unconditionally block impedances from above 20 KHz due to the customer's terminal equipment from an ADSL network unit and/or home networking interface unit, said filter circuit comprising:

first, second, and third inductors connected in series between a first input terminal and a first common point;

said first inductor having its one end connected to said first input terminal and its other end connected to one end of said second inductor, said second inductor having its other end connected to one end of said third inductor, said third inductor having its other end connected to said first common point;

fourth, fifth, and sixth inductors connected in series between a second input terminal and a second common point;

said fourth inductor having its one end connected to said second input terminal and its other end connected to one end of said fifth inductor, said fifth inductor having its other end connected to one end of said sixth inductor, said sixth inductor having its other end connected to said second common point;

first switching means having a first end and a second end and being responsive to DC loop current for electrically connecting said first end to said second end;

a capacitor having a first end connected to said first common point and a second end connected to said first end of said switching means, said second end of said switching means being connected to said second common point; and

correction circuit means interconnected between said common points and said output terminals for significantly reducing return loss caused by inductive impedance when the customer's terminal equipment goes off-hook.

2. An impedance blocking filter circuit as claimed in Claim 1, wherein said correction circuit means is comprised of a first tank circuit and a second tank circuit, said first tank circuit being formed of a first winding inductor, a first tank capacitor, and a first tank resistor all connected in parallel and between said first common point and said first output terminal, second tank circuit being formed of a second winding inductor, a second tank capacitor, and a second tank resistor all connected in parallel and between said second common point and said second output terminal.

3. An impedance blocking filter circuit as claimed in Claim 2, further comprising a seventh inductor having a first end connected to said first common point and a second end connected to said first tank circuit, and an eighth inductor having a first end connected to said second common point and a second end connected to said second tank circuit.

4. An impedance blocking filter circuit as claimed in Claim 3, further comprising second switching means having a first end and a second end and being responsive to said DC loop current for electrically connecting said

first end to said second end, and a second capacitor having a first end connected said eighth inductor at a first node and a second end connected to said first end of said second switching means, said second end of said second switching means being connected to said seventh inductor at a second node.

5. An impedance blocking filter circuit as claimed in Claim 4, further comprising a ninth inductor having a first end connected to said seventh inductor at said first node and a second end connected to said first tank circuit, and a tenth inductor having a first end connected to said eighth inductor at said second node and a second end connected to said second tank circuit.

6. An impedance blocking filter circuit as claimed in Claim 5, wherein said first switching means includes a first reed switch and said second switching means includes a second reed switch.

7. An impedance blocking filter circuit as claimed in Claim 6, wherein said first winding of said first tank circuit, said second winding of said second tank circuit,

said first reed switch, and said second reed switch are arranged in a dual winding inductor structure.

8. An impedance blocking filter circuit as claimed in Claim 6, wherein said first winding of said first tank circuit and said first reed switch is arranged in a first current sensor unit, said second winding of said second tank circuit and said second reed switch is arranged in a second current sensor unit.

9. An impedance blocking filter circuit as claimed in Claim 1, further comprising a metal-oxide varistor connected in series with said capacitor and in parallel with said first switching means.

10. An impedance blocking filter circuit used in telecommunication systems for interconnecting between incoming telephone lines and customer's terminal equipment so as to unconditionally block impedances from above 20 KHz due to the customer's terminal equipment from an ADSL network unit and/or home networking interface unit, said filter circuit comprising:

first, second, and third inductors connected in series between a first input terminal and a first common point;

said first inductor having its one end connected to said first input terminal and its other end connected to one end of said second inductor, said second inductor having its other end connected to one end of said third inductor, said third inductor having its other end connected to said first common point;

fourth, fifth, and sixth inductors connected in series between a second input terminal and a second common point;

said fourth inductor having its one end connected to said second input terminal and

its other end connected to one end of said fifth inductor, said fifth inductor having its other end connected to one end of said sixth inductor, said sixth inductor having its other end connected to said second common point;

first switching means having a first end and a second end and being responsive to DC loop current for electrically connecting said first end to said second end;

a capacitor having a first end connected to said first common point and a second end connected to said first end of said switching means, said second end of said switching means being connected to said second common point; and

bobbin means including at least a first narrow section on which is wound said second inductor, first wider sections on which are wound said third inductor, a second narrow section on which is wound said fifth inductor, and second wider sections on which are wound said sixth inductor for reducing interwinding capacitance so as to increase the useful

frequency range, said bobbin means having a center portion for receiving said first switching means.

11. An impedance blocking filter circuit as claimed in Claim 10, further comprising correction circuit means interconnected between said common points and said output terminals for significantly reducing return loss caused by inductive impedance when the customer's terminal equipment goes off-hook.

12. An impedance blocking filter circuit as claimed in Claim 11, wherein said correction circuit means is comprised of a first tank circuit and a second tank circuit, said first tank circuit being formed of a first winding inductor, a first tank capacitor, and a first tank resistor all connected in parallel and between said first common point and said first output terminal, second tank circuit being formed of a second winding inductor, a second tank capacitor, and a second tank resistor all connected in parallel and between said second common point and said second output terminal.

13. An impedance blocking filter circuit as claimed in Claim 12, further comprising a seventh inductor having a first end connected to said first common point and a second end connected to said first tank circuit, and an eighth inductor having a first end connected to said second common point and a second end connected to said second tank circuit.

14. An impedance blocking filter circuit as claimed in Claim 13, further comprising second switching means having a first end and a second end and being responsive to said DC loop current for electrically connecting said first end to said second end, and a second capacitor having a first end connected said eighth inductor at a first node and a second end connected to said first end of said second switching means, said second end of said second switching means being connected to said seventh inductor at a second node.

15. An impedance blocking filter circuit as claimed in Claim 14, further comprising a ninth inductor having a first end connected to said seventh inductor at said first node and a second end connected to said first tank circuit, and a tenth inductor having a first end

connected to said eighth inductor at said second node and a second end connected to said second tank circuit.

16. An impedance blocking filter circuit as claimed in Claim 15, wherein said first switching means includes a first reed switch and said second switching means includes a second reed switch.

17. An impedance blocking filter circuit as claimed in Claim 16, wherein said first winding of said first tank circuit, said second winding of said second tank circuit, said first reed switch, and said second reed switch are arranged in a dual winding inductor structure.

18. An impedance blocking filter circuit as claimed in Claim 16, wherein said first winding of said first tank circuit and said first reed switch is arranged in a first current sensor unit, said second winding of said second tank circuit and said second reed switch is arranged in a second current sensor unit.

19. An impedance blocking filter circuit as claimed in Claim 10, further comprising a metal-oxide varistor connected in series with said capacitor and in parallel with said first switching means.

20. An impedance blocking filter circuit as claimed in Claim 10, further comprising a thermo-fuse connected in series with said first, second and third inductors.